

Serial No. 10/607.012  
Response to Office Action of June 1, 2005

### ATTACHMENTS

Attached hereto is the Declaration of Charles W. Walker Jr. provided under 37 CFR §1.131 swearing behind the article by the Applicant published in *Journal of Power Sources* on July 20, 2002.

### REMARKS

This amendment is submitted to be fully responsive to the Office Action mailed June 1, 2005. With the entry of this amendment claims 1-7, 9-22 and 29-34 remain pending in the application. Support for the claim amendments and new claims 29-34 is found in the claims as originally filed, and as such it is submitted that no new matter has been added to this application by way of this amendment. New independent claim 29 incorporates the subject matter of original claims 1 and 7.

In the outstanding Office Action, claims 8 and 20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 1-6, 15-18, 20 and 21 were rejected under 35 U.S.C. §102(b) over Homma. Claim 7 was rejected under 35 U.S.C. §103(a) as being obvious over Homma. Lastly, claims 8-14 and 19 were rejected under 35 U.S.C. §103(a) as being obvious over Homma in view of Walker.

#### Remarks Directed to Rejection under 35 U.S.C. §112, Second Paragraph

Claim 8, now canceled and by way of this amendment incorporated into claim 1, was rejected as indefinite on the basis of the phrase "a copolymer monomer". In regard to this rejection, this phrase has been amended to recite "a second monomer copolymerized with said monomer to impart water insolubility."

Claim 22 was rejected as reciting an improper Markush group as well as positing the difference between a specific binding and a recognition moiety for a target analyte. In response

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to this rejection, claim 22 has been amended to recite a closed-ended grouping with each of the members being separated by appropriate punctuation. Applicant submits that binding and recognition are not equivalent forms of analyte sensing. By way of example, an antibody exercises specific binding of a target antigen, while an ion-selective electrode recognizes the presence of a target ion yet is also sensitive to and recognizes analytes having the same charge. As such, it is submitted that a specific binding moiety is the subset of recognition moieties for a particular target analyte. In light of the above amendments and remarks, rejection of claim 22 under 35 U.S.C. §112, second paragraph, is believed to have been overcome and no remaining rejections exist with respect to the subject matter of claim 22.

**Remarks Directed to Rejections of Pending Claims Based on Prior Art**

Anticipation has always been held to require absolute identity between the claimed invention and the teachings found within a single prior art reference.

Claim 1 in amended form includes the limitation of "a second monomer copolymerized with said monomer to impart water insolubility to said first polymer." As this limitation is nowhere found in Homma et al., *Journal of Applied Polymer Science* 75 (2000) 111-118 (hereafter "Homma"), reconsideration and withdrawal of the rejection of claims 1-6, 15-18 and 20-21 under 35 U.S.C. §102(b) as anticipated by Homma is solicited.

Claim 7 has been held to be obvious over Homma on the basis that even though Homma fails to teach a first polymer (e.g. PAMPS) being present from 2 to 40 total weight percent, that one of ordinary skill in the art would be privy to a wide range of total weight percent of PAMPS. (Paper No. 20050505, page 5, section 10).

In addition to the rejection of claim 7 having been overcome based on dependency from amended claim 1 now believed to be on allowable form, Applicant submits that the teachings of

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Homma teach away from the claimed range of first polymer weight percentage. Likewise, Applicant submits that new claims 29-34 are patentable over the prior art of record. Homma at page 112, first column, Experimental section teaches membrane formation with from 3.11-9.33 grams of 2-acrylamido-2-methylpropane sulfonic acid and 1.25 grams of polyvinyl alcohol, with this range of AMPS corresponding to an ionic group concentration ( $C_M$ ) of from 0.5 to 1.5 molar. The synthetic ratios taught in Homma correspond to an AMPS total weight percent in the resulting membrane of from about 70 to 88 total weight percent. Changing the concentration of acrylamido methylpropane sulfonic acid to the upper end of the range that is the subject matter of claim 7, 40 total weight percent would correspond to an ionic group concentration  $C_M$  of 0.28 molar. Homma on page 114, in the paragraph bridging columns 1 and 2 with reference to Figure 4(a), indicates that the concentration of outer electrolyte solution  $C_S$  as each membrane had a maximum initial angle change as a function of time  $(d\theta/dt)_{ini}$  and specified  $C_S$ .  $C_S$  at the maximum angle change as a function of time was shown to increase with increasing  $C_M$  with the maximum change in angle as a function of time being determined for a swelling ratio of  $V/V_0$  of 0.75.

Assuming for argument's sake that  $C_M$  was changed to the uppermost value according to claim 7, namely 0.28 molar, then such a membrane would appear if plotted on Figure 4 of Homma as a left-shifted figure in Figure 4(a) and a more sharply turning hysteresis curve in Figure 4(b) resulting in a decreased bending rate at a given electrolyte concentration  $C_S$ . As a result, Applicant submits that producing a low conductivity ionic polymer which has a slow mechanical response to stress (bending rate) unless placed in an electrolyte solution that is dilute (approximately 0.0008 molar) is exactly the problem of membranes that Homma attempts to solve. As such, Homma teaches away from the claimed monomer range. Applicant submits that

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Homma teaches away from a slow responding (a mechanically weak) polymer that represents a low efficiency electrolytic system based on a low conductivity electrolyte to account for the polymer film weakness. As such, it is respectfully submitted that Homma teaches away from the reduced amount of first polymer having from 2 from 40 total weight percent according to claim 7 and new independent claim 29.

In light of the above remarks, reconsideration and withdrawal of the rejection as to claim 7 under 35 U.S.C. §103(a) as being obvious over Homma is solicited.

Reconsideration and withdrawal of the rejection as to the pending claims under 35 U.S.C. §103(a) as being obvious over Homma in view of Walker is respectfully requested on the basis that Walker is not available as a prior art reference for the rejection of the pending claims. The article Walker, *Journal of Power Sources* 110 (2002) 144-151 (hereafter "Walker") was published on July 20 2002 by the Applicant as noted in the attached Declaration of Charles W. Walker Jr. provided under 37 CFR §1.131 and incorporated within this amendment. As the instant application was filed less than one year after the publication of Walker, no statutory bar exists with regard to this reference. Upon consideration of the attached Declaration of Charles W. Walker Jr. consistent with MPEP §715.01(c), withdrawal of Walker as a prior art reference is solicited.

With the removal of Walker as a reference, the deficiencies of Homma with respect to failing to teach a second monomer polymerized with PAMPS or the use of silica cannot be bolstered in the rejection of the pending claims.

As the limitation of original claim 8 has now been incorporated into independent claim 1, all of the pending claims are now submitted to be in allowable form.

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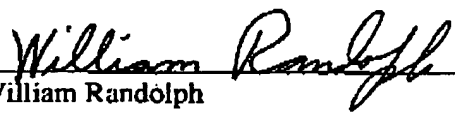
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In light of the above amendments and remarks, consideration and allowance of the pending claims is solicited.

**Summary**

Claims 1-7, 9-22 and 29-34 are the claims pending in this application. Each claim is believed to be in allowable form and directed to patentable subject matter. Reconsideration and withdrawal of the rejections is solicited. Should the Examiner have any remaining issues, he is respectfully requested to contact the undersigned attorney in charge of this application to resolve any remaining issues.

Respectfully submitted,

  
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Date: Sept. 29, 2005

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**CERTIFICATE UNDER 37 CFR 1.8(a)**

I hereby certify that this correspondence is being sent to the United States Patent Office via facsimile (571-273-8300) on Sept. 29, 2005 2005.

